

2017

Seaweed Kappaphycus farming

Aquaculture Department, Southeast Asian Fisheries Development Center

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Tigbauan, Iloilo, Philippines: Author.

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Is *Kappaphycus* FARMING profitable?

| Technical Assumptions for Multiple longline method | |
|---|---------|
| Project duration (years) | 5 |
| Culture period (days) | 50 |
| Number of crops per year | 5 |
| Farm area (m ²) | 5,000 |
| Space between lines (m) | 1 |
| Length of a cultivation line (m) | 30 |
| Number of lines per 1/2 ha | 150 |
| Number of knots/line | 120 |
| Total number of knots in 1/2 ha | 18,000 |
| Initial weight of seedlings/knot (g) | 50 |
| Initial total weight (kg) of seedlings | 900 |
| Cost of planting materials (PhP/kg) | 20 |
| Growth rate (percent/day) | 5.0 |
| Expected weight of harvest (kg freshweight/crop) | 10,964 |
| Expected weight of harvest (kg freshweight/year) | 54,821 |
| Farmgate price of dried seaweeds (PhP/kg) | 35 |
| Initial weight of seedlings for four croppings (kg) | 3,600 |
| Fresh to dry weight ratio (kg) | 7:1 |
| Cost and returns analysis (PhP per year) | |
| Investment cost | 72,950 |
| Revenue | 328,105 |
| Total variable cost | 101,050 |
| Total fixed cost | 30,014 |
| Total cost | 131,064 |
| Economic indicators | |
| Net income (PhP) | 197,041 |
| Return on investment (%) | 270 |
| Payback period (years) | 0.35 |
| Break-even price (PhP/kg) | 16.74 |
| Break-even production (kg/crop) | 3,745 |

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(L-R) AEM 32 The farming of the seaweed *Kappaphycus* (2000), AEM 32 (Filipino Edition) Pag-aalaga ng halamang-dagat na *Kappaphycus* (2007), Seaweeds of Panay (2006, 2nd edition). Check out our online bookstore for more titles: www.seafdec.org.ph/bookstore

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SEAWEED

Kappaphycus Farming



Southeast Asian Fisheries Development Center
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Why *Kappaphycus*?

Kappaphycus, a red seaweed locally known as ‘guso’ or ‘tambalang,’ constitutes eighty percent of the Philippines’ seaweed export (BAS 2015). It is also one of the top three marine-based export of the country. As an aquaculture enterprise, seaweed farming has been proven to be a top foreign exchange earner. Likewise, it can provide alternative livelihood for coastal farmers. *Kappaphycus* may be eaten but it is predominantly used as source of carrageenan which has a wide range of uses as an emulsifier, binder, gelling and thickening agent in food and non-food products.



Two varieties of *Kappaphycus* species: Green (*Kappaphycus striatus*) and brown (*Kappaphycus alvarezii*)

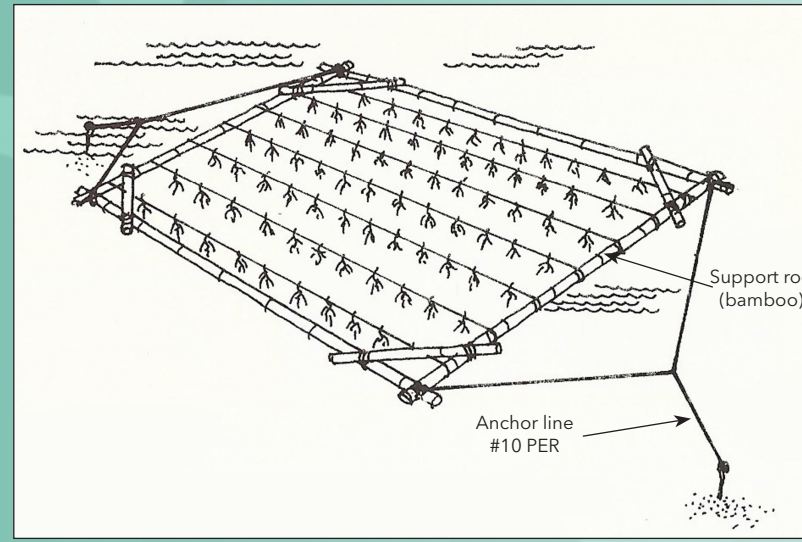
How to culture *Kappaphycus*?

CULTURE METHODS

There are two methods for deep-sea culture of *Kappaphycus*:

Raft method (single) – one unit is composed of four bamboos arranged in a square shape.

1. Install 10 m x 10 m bamboo raft at the farming site.
2. Tie seedlings (50 g/point) to polyethylene rope (PER) #8 using strawlace while at the shore. Distance between seedlings is 25 cm.
3. Tie the rope to the bamboo raft.



Raft long line (single)

Hanging long line – used in exposed deep-water areas (5-10 m deep) with moderate to strong water movement. However, this method needs a good support system by installing concrete anchors.

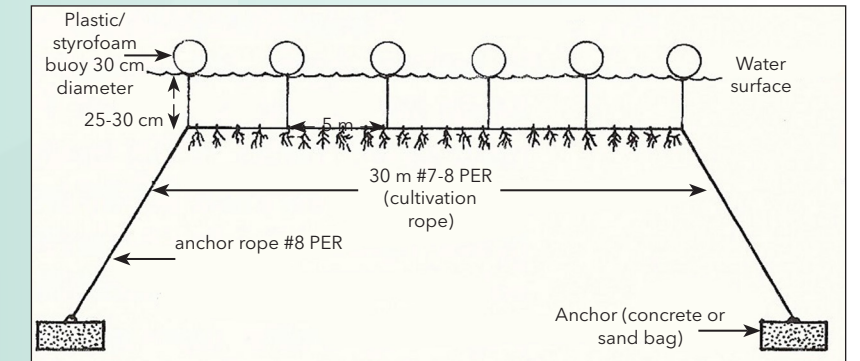
A. Single hanging long line

1. Tie seedlings (50 g/point) to 100 m-long PER (#8). Distance between seedlings is 25 cm.
2. Anchor one cultivation line on both ends with bamboo stake.



B. Multiple hanging long line (1/2 ha = 4,500 m)

1. Follow the same procedure in the preparation of seedlings for single hanging long line.
2. Arrange both ends of several cultivation lines in parallel rows.
3. Tie to PER (#8) and anchor to the bottom with a concrete block.



Hanging long line

HARVESTING

Seaweeds are harvested for drying after 50 days of culture. They can be harvested in two ways:

1. Untie the seaweeds from the cultivation rope.
2. Bring bamboo raft to the shoreline and untie seaweeds.

POST-HARVEST MANAGEMENT

1. Clean the harvested seaweeds and remove:
 - a. non-*Kappaphycus* seaweeds
 - b. silt and sand
 - c. other foreign particles
2. Set aside planting materials for next cropping (e.g. 1/2 ha = 900 kgs).
3. Dry remaining seaweeds in hanging line or spreading out on the ground with drying mats or platforms.
4. Store dried seaweeds in a clean, cool, dry and well-ventilated place. For bigger volume and export purposes, store seaweeds by baling (stocking of seaweeds in sacks).

